

**NATIONAL CONSTRAINING FACTORS TO THE  
AGREEMENT ON WATER AND ENERGY USE IN  
THE SYR DARYA BASIN  
(THE KYRGYZ REPUBLIC)**

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## Introduction

“Water is life”. One can feel the equity of this dictum most keenly in Central Asia. The shortage of potable and irrigation water under the dry and hot climate has always determined the role of water as the most valuable free good and the most important condition for life in the countries of the region.

Chains of the Tian Shan and Pamir Alai Mountains play a special role in the formation of water resources in Central Asia. About 20 thousand big and small glaciers with the total area of over 8 thousand square kilometers accumulate 700 billion cu m of water. About 150 km<sup>3</sup> of water are annually formed in these natural depositaries of the cleanest fresh water. About 90 percent of water are formed in the mountain areas of Kyrgyzstan and Tajikistan, which constitute 20 percent of the Aral basin territory.

The rivers, which are formed in the mountain areas, play an important role not only in the life of the republics, where the flow is formed, but also in adjacent countries. These countries are major water consumers.

The most part of flow of the major water arteries in the Aral Sea basin is formed in Kyrgyzstan and Tajikistan. That is the Syr Darya River (80%) and the Amu Darya River (83%) respectively. Average annual flow of the Syr Darya is 37.14 km<sup>3</sup> in a high-water year (5% of water supply) and 21.4 km<sup>3</sup> in a dry year (95% of water supply). Figures for the Amu Darya are 78.46 km<sup>3</sup>, 108.4 km<sup>3</sup> and 46.9 km<sup>3</sup>, respectively.

The main Syr Darya water arteries are Naryn and Kara Darya, the Kyrgyz rivers; these two rivers mingle their waters forming the Syr Darya. Main Naryn tributaries are Chon Naryn, Kichi Naryn, At Bashy, Kokemerren, Ala Buga, Chychkan, Uzun Akmat, Left Karasu, and Right Karasu. The Kara Darya tributaries are Tar, Kara Kuldzha, Yassy, Kurshab, Kekart, and Kara Yunkur. Additionally, from the territory of the Kyrgyz Republic water from over ten small and middle-sized rivers flow into the Syr Darya basin. From the Alai and Turkestan mountain chains Ak Buura, Kyrgyz Ata (Aravan Sarai), Isfairam Sai, Ak Suu (Shakhimardan), Sokh, Karavshi (Isfara), Leilek (Kodzho Bakyrghan), Kara Suu, and Ak Suu river waters flow into the basin; from the Chatkal chain these are Padysh Ata, Kassan Sai, Sumsar and Gava Sai rivers.

All these rivers are transboundary and play a significant role in the development of economy, especially in the irrigated agriculture, of the Central Asian countries.

The collapse of the USSR and a follow-up deep economic crisis that spread over all newly independent countries bore serious problems including those attached to water resources.

The condition of water allocation systems has taken a turn for the worse for industrial, potable and irrigation needs. That has resulted in the increased pollution vulnerability for many surface water sources. Due to consuming water of poor

quality, health of population has become exposed to a greater risk. The use of open water bodies in the region and consumption of water from irrigation canals have resulted in the growth of infectious diseases, especially among children. Today, the Governments of the Central Asian countries have not enough funds to reconstruct systems of water supply.

The factors listed above caused major water and ecological problems in the region. Suffice it to say about the well-known Aral disaster, which was caused mainly by the uncontrolled water diversion from the Syr Darya and Amu Darya channels. The disaster resulted in the following consequences:

- Winding-out of dust and salts from the dried bottom of the Aral Sea;
- Dangerous pesticide pollution and salt accumulation in the Syr Darya;
- Rise of groundwater level and destruction of buildings;
- Decrease of soil fertility and degradation of pastures;
- Loss of flora and fauna gene pool;
- Aggravation of life conditions and people's health;
- Growth of crude and infant mortality.

The intensive mining of mineral resources based on imperfect technologies was followed by the accumulation of great amounts of solid and liquid wastes. On the Kyrgyz water catchment areas of the Naryn-Syr Darya basin alone there are 14 idle and working mining facilities where the amount of solid wastes exceeds 550 million cu m. The most of this waste storage occurred to be in the zone of natural and technogenetic effects. The storage of wastes turned into the sources of systematic environment, and primarily water resources, pollution.

Another major aspect of the water problem is the consequences of constructing big water reservoirs in the mountain part of the area. The reservoirs allow many economic problems to be solved, but at the same time create new problems both ecological and social. For instance, when the Toktogul reservoir was constructed in Kyrgyzstan, the Ketmen-Tube Valley was submerged.

The Valley had occupied the area of 32 thousand ha, including 12 thousand ha of irrigated tillage. 24 settlements, the population of which had been 30 thousand people, were left under water.

Although, according to the design of the Toktogul structure some compensation measures had been suggested, they were carried out only in part. The rehabilitation of the submerged lands has not been completed yet. Due to this fact, Kyrgyzstan annually receives less agricultural produce. Apart from the ecological and social problems, the frictions related to unsettled problems of water use arose between the countries of the region.

The essence of the problem is: The hydrographic network of Central Asia is distinguished by the extremely unequal allocation of water resources.

A considerable part of the regional water resources is formed in the mountains in Kyrgyzstan and Tajikistan. At the same time, all regional countries are consumers of these resources. Year by year, the O&M of interstate hydropower structures

constructed on the Kyrgyz territory have become more expensive for the Republic though they must be maintained in the interests of the whole region. With the collapse of the USSR financial support has gone away. Yet, neighboring countries, which are consumers of water resources, do not compensate O&M costs of interstate structures incurred by the Republic.

Under the terms of sovereignty and transition to the market economy, the problems of water and hydropower potential uses showed up sharply. These problems are in the impossibility for the countries situated in the flow formation zone to manage water resources as of old. Besides, the downstream countries have certain difficulties in adoption of the new terms of international water use in accordance with the sovereign rights of countries to their own natural resources, and the laws of market economy.

Article 4 of the Water Code of the Republic of Kazakhstan states, "Waters in the Republic of Kazakhstan are an exclusive property of the state". Article 5 of the Law "On Water" of the Kyrgyz Republic defines, "The state water fund of the Kyrgyz Republic is a property of the state". Article 4 of the Water Code of the Republic of Tajikistan says, "In conformity with the Constitution of the Republic of Tajikistan, internal waters of the Republic of Tajikistan are an exclusive property of the state. They are national wealth and can be provided only for use." Article 3 of the Law "On Water and Water Use" of the Republic of Uzbekistan states, "Water is a state property, national wealth of the Republic of Uzbekistan. It is to be rationally used and is protected by the state."

To avert possible conflicts the five countries achieved concerted actions of cooperation for use of water resources of the region. These measures allowed decreasing the urgency of the problems arisen, but still the problems are not solved. If we consider that basing on the example of the Kyrgyz Republic, we have the following situation.

Based on the Soviet statements concerning interstate water use, 11.9 cu. km (out of 47.2 cu. km), or 25% of the flows formed on the own territory are due to Kyrgyzstan, the rest of the flows (excluding the Issyk Kul zone) go outside the country, to the adjacent republics.

Currently, irrigated farming in Osh, Dzhahalal Abad and Chu oblasts is short of water. Water availability in these oblasts is about 80-90%. Particularly, this is true for the irrigation sources like the rivers Isfairamsai, Shahimardan, Soh, Isfara, Patysha Ata and Kassansai.

**The cause is the limited amount of water use from the flow of transboundary rivers of Central Asia that had been set by the USSR Ministry of Water Management.**

Virtually, the approved Scheme of Complex Use and Protection of Water Resources in the Syr Darya basin provides for the water diversion of 0.39 km<sup>3</sup> from the Naryn channel for Kyrgyzstan. This amount is insufficient to irrigate the existing lands.

Allowed water amounts from the small rivers of the Fergana Valley, the main channel of the Naryn River and the transboundary rivers Chu and Talas provide no opportunity to develop new irrigated areas in Kyrgyzstan. However, there are 3.4 million ha of cultivable lands in the Republic. In view of the fact, that these lands are in the arid zone, guaranteed harvests are possible only under irrigation.

Such an approach to the allocation of water resources resulted in the low growth of irrigated area during the period of intensive development of irrigation in the USSR. While in 1967-1987 the irrigated areas of Uzbekistan increased by 1.364 million ha, and in Kazakhstan by 1.354 million ha, irrigated areas of Kyrgyzstan increased only by 189,000 ha. The total area of irrigated lands amounted to 4.170 million ha in Uzbekistan, 2.800 million ha in Kazakhstan and 1.077 million ha in Kyrgyzstan.

The Kyrgyz portion of a diverted water in the Aral Sea basin for 34 years (1960-1994) have come down from 5.21 cu km to 5.1 cu km; in Uzbekistan water diversion increased by 27.82 cu km, the increase could be also observed in Kazakhstan and Tajikistan. Totally, for this period the amount of diverted water has been increased by 47 cu km.

The increase of these areas was achieved through construction of reservoirs based on multi-year flow regulation, since the irrigation capacity of the Central Asian rivers was practically exhausted.

The most favorable area to construct reservoirs in terms of water and orographic conditions was Kyrgyzstan, where a series of major reservoirs was constructed. That series included Orto-Tokoi, Kirov, Toktogul, Papan, Andijan, Kirkidon, Kassansai and other reservoirs. Commissioning of these reservoirs resulted in the significant accretion of irrigated areas and increased water supply for existing irrigated areas, mainly in the adjacent republics.

Thus, only the Toktogul Reservoir of a 19.5 cu km capacity allowed irrigating new lands of 480,000 ha and increasing water supply for the area of 800,000 ha.

That facilitated expansion of the economies of Uzbekistan and Kazakhstan due to considerable additional amounts of highly profitable produce – cotton, rice and other crops.

For the last years of independence, the problem of power supply for the Republic's industries became extremely urgent. The share of fuel import in the today fuel and energy balance amounts to 60%. This subordinates the Republic to the energy policies of suppliers – Russia, Uzbekistan and Kazakhstan.

Kyrgyzstan was regarded as a consumer of fuel energy resources from other regions, the Naryn hydropower construction was developing as an economic maneuverable capacity source for the Energy Pool of Central Asia and South Kazakhstan, and with this, the Toktogul irrigation operation mode was top priority. This situation, normal under soviet conditions, has complicated own energy survival under the current realia of sovereignty, and it made the Republic look for alternative energy sources and increase efficiency of the existing ones.

The issue of efficient use of the Toktogul structure in the interest of Kyrgyzstan is momentous for the Republic. This structure was used mainly to meet the irrigation demands of Uzbekistan and Kazakhstan.

. Up to 70% of incoming water were released in the growing season. Therewith, the electric power, which was produced due to the irrigation releases in summer, was supplied to Uzbekistan and Kazakhstan.

That electric power amounted to 2 billion kWh per annum. At the same time, Uzbekistan and Kazakhstan compensated Kyrgyzstan for the underproduce of power by the hydropower plants of the Lower Naryn Cascade.

The compensation, which included 1 million cu m of coal, 2 million tons of gas and 400 thousand tons of fuel oil, was made to produce electric power to the Kyrgyz thermal power plants in autumn and winter.

After the collapse of the USSR, the Republic had to purchase lacking organic fuel at the prices close to the world ones. It was done to make up the power undergenerated on the Lower Naryn Cascade of hydropower plants in fall and winter.

The annual damage, which is caused by the operation of the Toktogul Reservoir under the irrigation regime, is assessed to be \$ 110 million.

During the recent years, the Republic undertook measures to increase summer usage of the Toktogul reservoir to make up the deficit in the own fuel and energy balance. This measure caused negative after-effects for the adjacent countries due to a lower water supply in the growing season, and inundation, or underflooding in winter time in the context of a lower through capacity of the Syr Darya river resulted from the economic activities in the flood plain.

## **1. Historical Background of the Draft Agreement, And Premises for Signing**

Due to the dry 1996 and 1997 years, the Toktogul structure turned from the irrigation to the winter energy operation mode. Water releases in summer were reduced. In this context, water supply of the lands in the Middle and Lower Syr Darya basin decreased. Because of that, business, economic and social as well as ecological, sanitary and epidemiological conditions in the region took a sharp turn for the worse. As the downstream Kairakkum and Chardara reservoirs are not designed to release increased water amounts, about 25 km<sup>3</sup> of water were discharged to the Arnasai depression during the ungrowing seasons of the last years to prevent flooding of the downstream towns and villages. This water is irrevocably lost for water balances of the Syr Darya and Aral Sea.

**Each of these problems is a gut issue for all Central Asian countries. To solve these problems, it would be expedient to create economic and legal basis for a mutually beneficial and out-of-conflict cooperation of the basin countries.**

Another important problem caused by uneven internal and interstate allocation of fuel and energy resources throughout Central Asia is the use of mighty hydropower potential. This potential amounts to 550 billion kWh per year. It includes such mountain rivers as Naryn, Vakhsh, Pyandzh and others, which flow from the Tian Shan, and on which major hydropower plants and reservoirs were constructed.

**In this context, the countries of Central Asia should cooperate based on the rational use of water and energy resources of the region and the provision of due quality of the resources for future generations.**

The efficiency of regional cooperation for the solution of these problems largely depends on the readiness of the Central Asian countries to provide the regime of the best favor in the area of rational water and energy supply.

The Interstate Council constantly considers the problems of rational use of fuel, energy and water resources of the region and the establishment of economic ties.

At the working meeting of April 14, 1995 in Shimkent, the Presidents of the Republic of Kazakhstan, the Kyrgyz Republic and the Republic of Uzbekistan charged the Prime Ministers with elaboration of intercoordinated approaches to the development of the fuel and energy complex, water management systems, transport and communications. That resulted in the Interstate Agreement, of 5 April 1996, addressing fuel, energy and water uses, and construction and operation of gas pipelines in the Central Asian region. At the regular meeting on May 6, 1996 in Bishkek, the Heads of the Republic of Kazakhstan, the Kyrgyz Republic, and the Republic of Uzbekistan discussed the problems relating to use of water and energy resources of transboundary rivers.

In their declaration, they noted:

- The countries of transboundary watercourses have sovereign rights to use their water and energy resources in accordance with their policies in the area of



environmental protection and development, and they are responsible for the activities that will not inflict damage to the environment of other countries;

- It is essential to plan rational use of water and energy resources taking into account demands of economic development of the countries;
- An agreed approach to the use of water and energy resources of the Toktogul cascade of hydropower plants should be introduced considering mutual economically justified supplies of electric power, gas, coal and petroleum products;
- Improved use of water and energy resources of the Syr Darya basin will facilitate the solution of environment problems in the Aral Sea basin.

To attain the objectives, the Executive Committee of the Interstate Council upon the mutual assent of the Parties included the development of the draft Agreement “On Use of Water and Energy Resources of the Syr Darya Basin” in the Action Program on Formation of a Single Economic Zone for 1997-1998. To implement this item a Working Group comprised of the heads and specialists of water and energy ministries and agencies was formed and authorized by the Governments of the Republic of Kazakhstan, the Kyrgyz Republic, the Republic of Tajikistan and the Republic of Uzbekistan. For two years, the Group was working over the draft Agreement, technically and financially assisted by the USAID Regional Mission in Central Asia. The heads and specialists had a chance to study international experience through round tables and seminars. International experts well versed in international law on joint use of transboundary rivers, the pricing of water delivery services, flood regulation, cost recovery and etc. were invited there. An additional seminar was arranged in the US. The specialists could study the issues of joint use of the Columbia Basin (U.S.A. and Canada), and the Rio Grande Basin (USA and Mexico).

The adoption of the Interstate Agreement “On Use of Water and Energy Resources of the Syr Darya River Basin” signed on March 17, 1998 by the heads of the Governments of the Republic of Kazakhstan, the Kyrgyz Republic, and the Republic of Uzbekistan was a great achievement in the area of solution of water and energy problems.

The Agreement arranges the irrigation regime of the Toktogul structure and includes the commitments of Kazakhstan and Uzbekistan that they will buy equal shares of the generated electric power accompanying the Toktogul released water.

To satisfy the fuel demand of Kyrgyzstan in winter electric power in summer is paid either by supplies of coal and natural gas, or by a monetary equivalent.

This is a framework agreement and is valid for 5 years. It will promote stabilization of water management and energy conditions in Central Asia.

## **2. Progress of Interstate Agreement on Use of Water and Energy Resources in the Syr Darya Basin**

The analysis of how the interstate agreement on water and energy uses in the Syr Darya basin is being implemented demonstrates the following:

In accordance with Article 2, to ensure agreed operation regimes of water facilities and reservoirs of the Naryn-Syr Darya Cascade and supply water for irrigation, the Parties every year consider it necessary to coordinate and make decisions on water releases, generation and transfer of electric power, and equivalent compensation for energy losses.

Article 4 provides for the Toktogul operation in the irrigation regime and includes the commitments of Kazakhstan and Uzbekistan that they will buy equal shares of the generated electric power accompanying the Toktogul water releases.

To satisfy the fuel demand of Kyrgyzstan in winter electric power in summer is paid either by supplies of coal and natural gas, or by a monetary equivalent.

Based on the Agreement, the recognition of Articles 2 and 4 allowed the participating countries for the first time to sign a multilateral Agreement on Joint and Complex Water and Energy Uses of the Naryn-Syr Darya Cascade in 1998. The Agreement holds a specific information on the amounts of water and energy released from the Toktogul hydro structure in exchange for gas, coal, fuel oil and electricity supplied by the downstream countries.

The Interstate Agreement on Use of Water and Energy Resources of the Naryn-Syr Darya Cascade of Reservoirs in 1999 has been also prepared.

In Article 3, the Parties take on obligations not to undertake actions violating the agreed regime of water use and power supplies, and derogating from the Parties' rights to receive mutually agreed supplies of water and energy and transit thereof through the own territories. One of the conditions assisting to this Article is the parallel operation of the energy systems of Central Asia.

While the Kyrgyz Republic and the Republic of Uzbekistan meet the provisions of Article 3, the Republic of Kazakhstan does not. The reasons are the restructuring and privatization of fuel and energy sectors, and departmental approaches. The unilateral actions of power engineers of Kazakhstan, who broke the 500 kV loop and knocked out the parallel operation of the Central Asian Energy Pool caused serious failures in the energy systems of Kyrgyzstan and Uzbekistan, and brought to their lower reliability and stability.

**Thus, in the growing period of 1998 the major condition—to provide the parallel operation of energy systems in the Power Pool of Central Asia—was not met.**

The terms of the Agreement also ensure supplies of water and energy resources through credit lines and other monetary instruments (Article 5). In

accordance with the Agreement, conflicts are resolved through courts of arbitration on the initiative of the member countries (Article 9).

**Article 10 says, that for the purposes of further improved regulation and use of water and energy resources, development of economic relations aimed at guaranteed water supply in the Syr Darya basin, the Parties agree to consider jointly the following issues:**

- Construction of new hydropower facilities and reservoirs, or alternative sources in the region;
- Transition from the existing barter payments to financial relations;
- Development of pricing mechanisms based on the single tariff policy;
- Safe operation of facilities located in the Syr Darya basin;
- Economical and rational use of water resources, using water-saving technologies and technical means of irrigation;
- Reduction and cease of discharge of polluted waters to the Syr Darya water sources.

The Decision made by the Heads of the participating countries on March 26, 1998 to establish the International Water and Energy Consortium was the first step towards implementation of Article 10 of the Agreement.

The Counsel of Prime Ministers of the Republic of Kazakhstan, the Kyrgyz Republic, the Republic of Tajikistan and the Republic of Uzbekistan approved the Provisions of International Water and Energy Consortium which outlined goals, objectives, structure, functions and responsibilities of the Consortium.

The Counsel made a decision to prepare a draft Agreement and constituent instruments. The creation of the Consortium will allow providing for an agreed irrigation regime and rational allocation of water and energy resources in the region.

Until the Consortium has been established, BVO Syr Darya and ODC Energia will remain the executive bodies, which provide for the regime of water releases and electric power transfers.

This is a framework Agreement with the prospect of 5 years, and it will be automatically extended for further five-year periods. Other countries may join the Agreement (Articles 12,13). At present, the Republic of Tajikistan is passing the procedures of joining the Agreement.

On the whole, the successful implementation of the Agreement by the CAEC countries will assist in water management sustainability, fuel and power supply of the Central Asian republics.

### **3. Progress-of-Implementation Analysis of the Agreement on Joint and Complex Use of Water and Energy Resources of the Naryn-Syr Darya Cascade of Reservoirs in 1998**

Based on the framework Agreement the participating countries signed the first multilateral agreement on joint and complex use of water and energy resources of the Naryn-Syr Darya cascade of reservoirs in 1998. It contains a concrete information on the water release schedule and energy transfers from the Toktogul reservoir with the associated gas, coal, fuel oil and electric power supplied by the downstream countries.

As of January 1, 1998, the amount of water in the Toktogul reservoir totaled 10.2 billion cu m, whereas for the same period of 1997 it made up 13.07 billion cu m.

For the first Quarter of this year actual water releases from the Toktogul reservoir exceeded the agreed amounts by 0.8 billion cu m due to fuel undersupplies and the TES<sup>1</sup> winter-fall underloads. For this period 3.0 billion cu m of the reservoir storage were released.

Due to favorable meteorological and hydrological conditions, which caused high tributary inflow and early filling of reservoirs in the Syr Darya basin, actual water releases from the reservoirs during the growing season amounted to 3.7 billion cu m, instead of 6.5 billion cu m specified in the Agreement.

On the whole, the inflow to the Toktogul reservoir totaled 11.5 billion cu m for the last growing season. It is by 3.3 billion cu m less than for the same period of 1997. The circumstances allowed storing 7.8 billion cu m, and by a fall-and-winter period, the reservoir storage reached 15.5 billion cu m. The total inflow to the reservoir during the last year was 14.5 billion cu m. The total consumption for the same period was 11.2 billion cu m.

To ensure established by the Agreement irrigation releases in 1998, 2.2 billion kWh of power supplies from the Kyrgyz Republic were scheduled during the growing season, including 1.1 billion kWh into the Republic of Uzbekistan and 1.1 billion kWh into the Republic of Kazakhstan. Under the conditions of mutual compensation deals Uzbekistan during a year has to deliver 772 million cu m of natural gas and 20 thousand tons of fuel oil to the Bishkek and Osh TES, and transfer 200 million kWh of electric power during the growing season. Kazakhstan should supply the Kyrgyz Republic with 566.7 thousand tons of coal and 250 million kWh of electric power.

Actual supplies for the last year:

- The Republic of Uzbekistan supplied 747.9 million cu m of natural gas (the annual plan was 772 million cu m), 23 thousand tons of fuel oil (instead of the planned amount of 20 thousand tons), 74.9 million kWh of electricity (the annual estimated amount was 200 million kWh).

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<sup>1</sup> Heat and Electric Power Plant

- The Republic of Kazakhstan supplied 150.4 thousand tons of coal instead of 566.7 thousand tons, according to the plan, 150 million kWh of electricity (with the annual plan of 250 million kWh).
- The Kyrgyz Republic transferred 489 million kWh of electricity to the Republic of Uzbekistan (with the annual plan of 1.1 billion kWh) and 468.6 million kWh to the Republic of Kazakhstan (with the annual plan of 1.1 billion kWh).

Favorable hydrological conditions decreased water demands for irrigation. Thus, based on the vegetation water releases the Kyrgyz Republic supplied Uzbekistan by 611 million kWh of power less than it was stipulated by the plan. The supply of electricity to Kazakhstan was by 631 million kWh less than the plan specified. That allowed storing 1.5 billion cu m of reserve water in the Toktogul reservoir for irrigation needs of further years.

#### **4. Analysis of the Draft Agreement on Joint and Complex Use of Water and Energy Resources of the Naryn-Syr Darya Cascade of Reservoirs in 1999**

During 10-11 February period, this year, the expert groups of three Republics prepared and coordinated the Draft Interstate Agreement on Joint and Complex Use of Water and Energy Resources of the Naryn-Syr Darya Cascade of Reservoirs in 1999.

Compliant to negotiations the Kyrgyz Republic during the growing season will have to supply, with excess water releases, 2.2 billion kWh of electricity, sharing it equally: 1.1 billion kWh to the Republic of Uzbekistan and 1.1 billion kWh to the Republic of Kazakhstan. Based on mutual offsets, the Republic of Uzbekistan should supply the Kyrgyz Republic with 500 million cu m of natural gas, from Kazakhstan the Republic will get 566.7 thousand tons of coal from the Karaganda basin, and 250 million kWh of electricity.

However, having negotiated the proposed options the Parties did not come to an agreement.

The Kyrgyz Republic offered to include in Article 4 the issues of offsets with the Kazakh Party on the terms of 1998, and the issues of redemption of the Kazakh consumers' debt to the JSC Kyrgyzenergo. This debt amounts to US \$24.1 million. The payback schedule has to be submitted before March 1, 1999.

The Kazakh Party suggested that the proposed alterations will not be included in the Draft Agreement, but they might be included in the Protocol formulated as follows: "The Kazakh Party will propose the managing entities to develop before March 1, 1999 a redemption schedule for the electric power supplied to the JSC Kyrgyzenergo customers in 1994-1997 and will send it to the JSC Kyrgyzenergo.

The Kazakh Party deems that the amount of coal supplies to the Kyrgyz Republic, which was offered by the Kyrgyz Party (566 thousand tons) as a compensation for the electricity, should be additionally considered and calculated. The opinion of Kazakhstan is that there are no due justifications and calculations, which confirm the rightfulness of the proposed tariff of 2 cents per 1 kWh. The tariff does not meet the conditions of the current electricity market in Kazakhstan and does not warrant the cost of the Toktogul generated electric power.

Thus, the Kazakhstan Party does not consider it appropriate to stipulate in the Agreement specific coal deliveries to the Kyrgyz Republic.

The Kazakh Party suggests that the mutual payment will not be made for the electricity transit within the 500 kV electricity ring, explaining that this will increase the electricity cost, and, as a supervention, will constitute a real threat of disrupting the Ring this year.

The Ministry of Energy and Electrification of Uzbekistan asks to set the electricity price for 1999 lower than 4 cents per 1 kWh, because of the debts of the Kyrgyz Republic for natural gas in 1998. These debts amounting to \$26 million occurred due to the decrease of 611 million kWh in the electricity import because of a high-water year. In 1999, Uzbekistan will reduce the supplies of natural gas down to 500 million cu m versus 600 million cu m requested by Kyrgyzstan. In the previous years the electricity supply schedule was approved on a monthly basis, together with the water release schedule, but for 1999 this clause is not included in the Agreement.

**As the Kyrgyz Republic disagreed with the proposals made by Kazakhstan and Uzbekistan, the Minister of Energy and Electrification of the Republic of Uzbekistan did not initial the Agreement. The individual opinion of the Republic of Kazakhstan entered the Protocol.**

For the past period of 1999 the Osh and Bishkek TES received 113.3 million cu m of natural gas from the Republic of Uzbekistan as a compensator for electric power that has to be transferred during the vegetation period. The coal from Kazakhstan was not supplied during this period though the deliveries had to be made in advance.

According to the Kyrgyzgidromet's anticipatory prognosis water inflow to the Toktogul reservoir is projected on the level of long-time average annual inflow values, and by the early fall-winter time it will be as much as 13.0 billion cu m.

Hence, the water-abundance prognosis for 1999 may result in unfulfilling the Draft Agreement, and in the aggravation of the fuel-supply situation with the Bishkek and Osh TES. Whereas these power plants may deliver the energy that was undersupplied in winter time by the Toktogul hydro power cascade due to water accumulation in winter time for future irrigation needs of Uzbekistan and Kazakhstan.

## 5. Constraining Factors to the Agreements

### Economic Factors:

1. While carrying out offsets on all types of energy resources and their transportation, tariff policy is not coordinated (Article 4). This is addressed to:
  - 1.1 The offsets on the interstate electricity transfers (including tariffs for power transit and frequency regulation);
  - 1.2 The offsets on the compensation of costs for operation and maintenance of the Toktogul reservoir and water delivery services; and
  - 1.3 The prices for natural gas supplied from Uzbekistan and coal from Kazakhstan.
2. In the Agreement, there is no mechanism to compensate damage in the situation when the obligations of the Agreement are not met due to changed water management circumstances. This mechanism should be created to prevent negative consequences of 1998, when due to water abundance and high water availability, Kazakhstan and Uzbekistan reduced the consumption of water from the Toktogul reservoir. In consequence of that, Kyrgyzstan will not receive the necessary amount (100 million cu m) of natural gas for the Bishkek TES.
3. Different tempo of restructuring and privatization of fuel, energy and water sectors.
4. Lack of rational water use policy in the Naryn-Syr Darya basin that should be coordinated with the economic strategy of the countries.

Based on the coordinated water and energy policy prospects a **Program of the CAR cooperation in the area of rational use of water and energy resources in the Central Asian region** should be developed and adopted.

The Program should be based on the demand-side prognosis referring to water, and energy carriers. The Program must be developed emanating from several scenarios for a prospect economic strategy of the Central Asian countries and taking into account that sanitary flows to the Aral Sea basin should be provided.

Based on the results and their joint analysis the CA countries should come to **the reasonable water use strategy** and correct the structural policy for the sector economic development, especially the structure of agriculture and the power engineering sector, and institute the concept of the CAR future economic integration.

### Political Factors:

1. *Imperfection of negotiation processes.*



To solve water problems in the region the key role is assigned to interstate negotiations. This is acknowledged and approved by the President's Decree, of 6 November 1997, as a priority instrument for the adoption of the national policy in the area of water use from the rivers formed in Kyrgyzstan and flown out to the territories of the adjacent countries.

The current negotiation conditions are far from being successful in Kyrgyzstan. This seems to be obvious, as each nation holds its own interests.

Nevertheless, gradual convergence of the CAR positions promotes more optimism for the solution of water problems. Immediately, after establishing the sovereignty the Central Asian countries strove to reach full energy independence anyway, but today they make efforts to put an end to self-isolation and turn to integration.

In this respect we cannot but emphasize the significance of the preparation of the Agreement between the Republic of Kazakhstan, Kyrgyz Republic, Republic of Tajikistan and Republic of Uzbekistan on Establishment of a Water and Energy Consortium. The joint development of this Agreement is a recognition of importance for the Central Asian region to control water and energy problems raised by our Republic.

As it was assumed, unavoidable contentions in the positions of the Parties arose conditioned by the nonconcurrences of interests. As an example, the Uzbek and Tajik Parties did not support the territorial approach to the problems, i.e. their solution within the Naryn-Syr Darya basin.

All the given examples reveal the utmost complexity of water problems in the region and the difficulties of the negotiation process. However, this is not the reason for denial to find mutually acceptable decisions.

The success in resolving the water-use problems will totally depend upon two factors:

1. Funding of projects designed for improving the efficiency of water resources use;
2. Development of a legal framework for joint use of transboundary rivers.

The first factor is apparently determinative. The countries of the region surmount an economic crisis. The successful solution of water problems will much depend upon how the economic situation in the republics will develop. It is presumable, that the Central Asian countries, having got "on their feet," will be able to settle the issues addressed to **service mutual calculations relating to flow control and water supply**, these issues are successfully adjusted in economically developed countries.

Besides, all existing projects addressed to protection and rational use of water and energy resources are capital-intensive. For example, the construction of the Kambarata hydropower plant, which reservoir could raise the efficiency of water use in the Fergana zone, is appraised as much as over 2 billion US dollars. The measures that provide the Syr Darya waters for the Aral Sea cost the similar sum.

It is very important for cooperation of nations with different levels of development to move forward based on mutual help and respect, the countries that are more developed and powerful should have a patronizing attitude towards the developing countries and their needs.

The second factor, i.e. the legal framework for water uses, should be based on the following principles of international law:

- Principle of nature protection, and harmonious use of natural resources. According to this principle countries should cooperate based on equality and mutual benefits in the area of environment;
- Principles of a corporate sovereign right of property as far as natural resources are concerned. This stipulates that each nation has a sovereign right to handle internal resources according to its own laws, environmental policy, and obliges other countries to respect this right;
- Principle of uninfllicting damage on environment that extends out of jurisdiction of the country, or the principle “Do not do harm”.

## ***2. Inconsistency of water and energy policy in the CAEC<sup>2</sup> countries***

Cooperation of countries for maintaining and use of natural environment and its resources is the object for active contemporary activities of experts, a topic for interstate negotiations both on bilateral and multilateral bases.

Development of interstate water and energy strategies, which will be a legal basis for rational energy and water uses in Central Asia, is anticipated as a result of those activities.

## ***3. Insufficient development of integration processes in CAEC***

Accommodation of principles of joint cooperation for use of water and energy resources will promote a broader and enhanced integration of economy in the countries of the region and will create good conditions for their sustainable development.

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<sup>2</sup> Central Asian Economic Community

## **6. Prospects of Implementation of the Agreement between the Government of the Republic of Kazakhstan, the Government of the Kyrgyz Republic, and the Government of the Republic of Uzbekistan on Use of Water and Energy Resources in the Syr Darya Basin (a prognosis effort).**

**One of the main conditions for implementing the Agreement** is a parallel functioning of energy systems within the Energy Pool of Central Asia, and signing an agreement between the governments of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan. In addition, it is necessary to re-establish CAR energy ties through the development of an energy market that in the future may include the Unified Electric Power System (UEPS) of Russia via Kazakhstan. A parallel operation of the Central Asian Energy Pool (CAEP) serves as the basis for an energy market. In the long view, the 500 kV closed electricity ring is the major condition for entering the CAEP, parallel operated with the UEPS of Kazakhstan and Russia.

Regardless of form of ownership, national energy systems of the countries, independent generators and electrocapacious customers may participate in the formation of the wholesale market of electric power through the CAEP.

In the context of the above stated, the signing of the interstate draft agreement on the parallel operation of the Central Asian energy systems at the forthcoming summit of the Heads of the CAEC Governments is a necessary event.

**The mechanism for implementing the Agreement** must be based on the formation of viable interstate entities capable to use rationally regional fuel, energy and water resources, and supply all consumers with reliable energy and water. The entities should be also able to pursue a long-term investment policy.

With this objective in mind, the heads of the countries participating in the Agreement on Creation of a Single Economic Zone passed on March 26, 1998 the resolution on Establishment of an International Water and Energy Consortium.

The Council of Prime Ministers approved the Provisions of the International Water and Energy Consortium, which identified goals, objectives, structure, functions and obligations of the Consortium. The decision was taken to prepare draft constituent instruments and an agreement among and between the interested states of Central Asia; the Decision and the Agreement are included in the forthcoming agenda of the CAEC Heads of the Governments' meeting.

Having approved the Consortium the Heads of participating countries spoke in favor of the agency on the Naryn-Syr Darya basin management, which should be established applying the principles of equal participation, concerted decision-makings, and acknowledging sovereign rights of the participating countries.

Elimination of energy losses in the Naryn and Syr Darya basins is possible only through the construction of additional hydro power plants (HPPs) and reservoirs which play a role of seasonal energy compensators that allow decreasing power

generation at the Tyoktogul HPP and fewer releases from irrigation-mode reservoirs in winter. The high-priority and out-of argument project is Kambarata HPP-1 located upstream from the Toktogul reservoir, which will fully eliminate disputes of how to use water resources.

The establishment of the International Water and Energy Consortium for the development of the Naryn-Syr Darya basin through the shared construction of the Kambarata HPPs and putting them in the energy-mode operation would allow the Toktogul structure operating exactly in the irrigation mode. As soon as water-use limits are set on the demand side the construction of the Kambarata HPPs will ensure the Aral Sea supply with water, and will resolve environmental problems.

Construction of the Cambarata HPPs with total design capacity of 2,260 MW and power generation of 6.2 billion kWh/year is valued at 2.2 billion US dollars. ). Such investments exceed the Kyrgyzstan's ability, thus, foreign investments should be attracted for the construction of these power plants. This is possible only in the case if the water-use countries will show good will for shared construction and operation in the future.

At present, the EBRD has taken interest in the construction of Cambarata HPP-2 and proposed to cover 70% (210 million US dollars) of the total construction cost. Local investors, or the Consortium participants (primarily Kyrgyzstan, and, if they agree, Kazakhstan, Uzbekistan, and Russia, the latter as a historical supplier of hydraulic equipment) should invest 30 percent of cost.

Some other international financial institutions also expressed interest in the construction of Cambarata HPP-1 of \$1.9 billion total cost in case the consortium has been established.

**The establishment of the International Water and Energy Consortium** would ensure a concerted irrigation mode, and allocation of water and energy resources in the procedure established by the intergovernmental agreement on water and energy uses in the Syr Darya basin and the draft agreement on a parallel operation of energy systems in the Central Asian countries.

**In the future**, it is planned to transfer from annual barter agreements to monetary terms, on the condition that **an agreed upon tariff policy is carried out for all types of energy resources, including transportation and recovery of costs** for operation and maintenance and for the reconstruction of water and energy facilities. In its turn the penetrated wholesale energy market will help to find the best optimal options for energy flows.

If the water from Toktogul is required for Uzbekistan and Kazakhstan, then an economically beneficial energy compensation variant for Kyrgyzstan should be found. It might be better to buy natural gas in Turkmenistan for the Bishkek TES, and this may cost cheaper than ship coal from Kazakhstan.

In the growing seasons the Consortium must look for an advantageous buyer of the Toktogul power. There is no need to be limited by the territory of the region;

power may be sold through the wholesale market to Russia, China and other countries, in a word, to the place where benefit could be found.

In view of the above stated, the process of consideration and signing the intergovernment Agreement on Establishment of an International Water and Energy Consortium should be accelerated.

## **Proposals**

**To advance the Agreement, the Central Asian countries must strengthen their efforts to implement the Plan of Actions which stipulates the following measures:**

- Develop the optimization modeling program for the Naryn-Syr Darya cascade of reservoirs;
- Prepare suggestions to develop a single tariff policy for all types of energy resources provided within the framework of this Agreement;
- Develop unified methods to regulate flows of transboundary rivers taking into account balanced interests of the basin countries and determination of compensation volumes;
- Develop the Program on CAR Cooperation in the sphere of rational use of regional water and energy resources in the Central Asian region based on demand-side prognosis for water, and energy carriers. The Program shall assume several scenarios to pursue the Central Asian prospect economic policies, taking into account sanitary flows to the Aral Sea basin.
- Based on the obtained results and their analysis, the Central Asian countries must adopt a rational water and energy strategy, and supplement the Agreement with civilized instruments to promote its implementation, taking into consideration international experience.